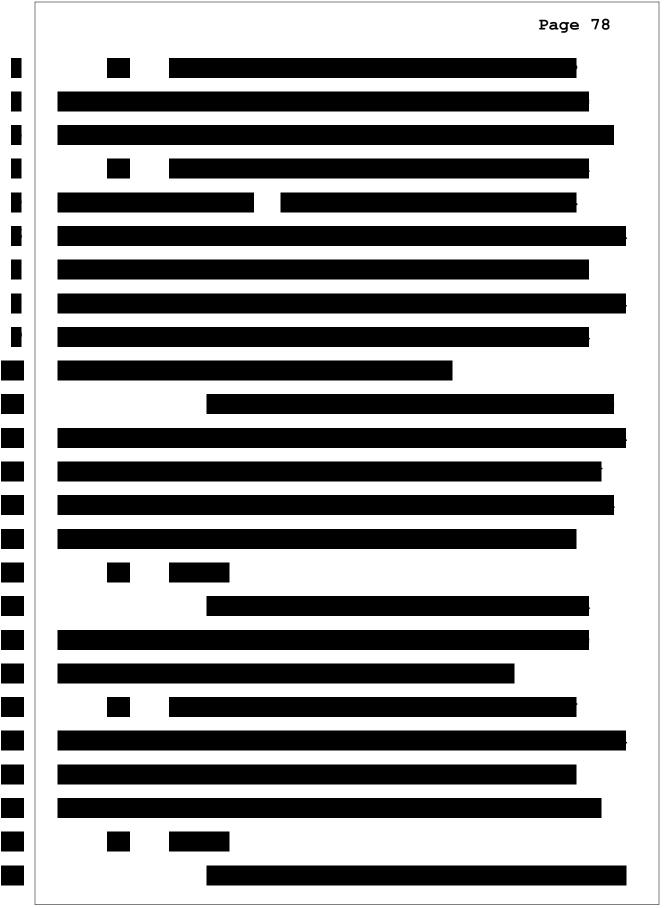
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Exhibit 7

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Page 1
1
                   UNITED STATES DISTRICT COURT
                 NORTHERN DISTRICT OF CALIFORNIA
2
                      SAN FRANCISCO DIVISION
3
    IN RE GOOGLE PLAY STORE
                                    Case No.
    ANTITRUST LITIGATION
                                   3:21-md-02981-JD
 4
5
    This Document Relates To:
 6
    State of Utah et al. v.
    Google LLC et al.
7
    Case No. 3:21-cv-05227-JD
8
    Match Group, LLC et al. v. :
9
    Google LLC et al.
    Case No. 3:22-cv-02746-JD
10
    Epic Games Inc. v. Google
    LLC et al.
11
    Case No. 3:20-cv-05671-JD
12
    In Re Google Play
13
    Consumer Antitrust
    LItigation
14
    Case No. 3:20-cv-05761-JD
15
16
               ** ATTORNEYS' EYES ONLY **
17
                 TUESDAY, APRIL 4, 2023
18
19
            Video Recorded and Remote Zoom
     Deposition of HAL J. SINGER, Ph.D., taken
20
     pursuant to Notice, at the law offices of
     Munger, Tolles & Olson LLP, 601 Massachusetts
21
     Avenue NW, Washington, DC, commencing at
     approximately 9:11 a.m., on the above date,
22
     before Rose A. Tamburri, RPR, CM, CCR, CRR,
     USCRA Speed and Accuracy Champion and Notary
23
     Public.
24
25
```

	Page 77	
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	Page 85
1	Logit model is known as the independence of a
2	relevant alternative's property?
3	A. Yes.
4	Q. And the independence of a relevant
5	alternative's property says that all products
6	being studied in the Logit model should be
7	substitutes in proportion to their share?
8	A. I think that's fair.
9	Q. Okay.
10	Now, if the indepen indepen
11	if the well, let's back up.
12	Can we call it the independence of
13	a relevant alternative's property IIA?
14	A. Sure.
15	Q. Okay.
16	And if the IIA assumption is not
17	satisfied in the Logit model, then the Logit
18	model can lead to unrealistic forecasts; is
19	that right?
20	A. I'm not going to say so necessarily.
21	I think that it could produce estimates that
22	are different than the true parameters that
23	you're hoping to estimate, but I think the
24	word that you used was unreliable? And I
25	felt

	Page 86
1	Q. Well
2	A I felt like that was too harsh.
3	Q. Well, let me just ask you this:
4	Does your Logit model satisfy the
5	IIA property?
6	A. I believe it does, yes.
7	Q. And if your Logit model does not
8	satisfy IIA, would that lead you to have any
9	concern that its forecasts are unrealistic?
10	A. Well, it would depend on on how
11	badly these assumptions were violated. So I
12	think that they're not. I think that the
13	the groupings here were economically
14	reasonable. These are not my groupings; these
15	are Google's groupings that are then
16	self-selected by the by the apps.
17	And there are tests for IIA, I
18	think Haus Hausman and maybe McFadden have
19	developed a test. It's it has its flaws as
20	well. Those tests are not feasible here
21	because we don't have consumer level data.
22	We're we're just seeing the apps shares.
23	So we'd have to drop the entire app out of the
24	dataset, in which case you'd get the same
25	findings, and so you'd always affirm the IIA.

	Page 87
1	Your experts, of course, didn't
2	show that IIA wasn't satisfied through those
3	tests either, which I think is confirmation
4	that we can't do those tests. But I feel
5	confident the IIA is reasonably satisfied
6	here.
7	MS. GIULIANELLI: We can you
8	can continue on, but at some point, let's take
9	a break. We're I don't want to interrupt
10	your
11	MR. RAPHAEL: I'm happy to take a
12	break now.
13	THE WITNESS: Great.
14	THE VIDEOGRAPHER: Going off
15	record, the time is 10:37.
16	(Whereupon, a recess was taken at
17	the above time.)
18	THE VIDEOGRAPHER: Going back on
19	the record. The time is 10:47.
20	BY MR. RAPHAEL:
21	Q. Dr. Singer, is it your opinion that
22	Google established the categories in the Play
23	Store with the IIA property in mind?
24	A. That is doubtful. I think the record
25	evidence tells us that Google established the

	Page 88
1	categories based largely on how Apple chose
2	its categories.
3	Now, it's possible that just as a
4	a pool player doesn't have physics in the
5	back of their mind, that they're they're
6	respecting the laws of physics. I think
7	that's a famous Bill Friedman quote, that when
8	Google is assembling its categories, it's
9	doing it in a way that satisfies the IIA.
10	But it certainly would be
11	astounding if if they had, if some
12	marketing person had the IIA at the top of the
13	mind when they were selecting the categories.
14	Q. Right.
15	Because to your knowledge,
16	Google's decision with to establish the
17	categories in the Google Play Store was made
18	as a matter of marketing?
19	MS. GIULIANELLI: Objection to
20	form.
21	THE WITNESS: I think I think
22	that as I just stated, the record evidence
23	suggests that Google was
24	, and
25	I think that ultimately Google wants to

	Page 89
1	maximize the profits of the of the Play
2	Store, and so it wants consumers to be able to
3	find things easily and sensibly and it's
4	it's profit drivenal; how about that?
5	BY MR. RAPHAEL:
6	Q. And in trying to maximize the
7	profitability of the Play Store, Google
8	established the categories by reference to the
9	categories in the Apple App Store; is that
10	right?
11	A. In part, yes. That Google that
12	Apple made presumably intelligent choices,
13	Apple's App Store was doing well and and
14	Google figured that
15	
16	
17	
18	•
19	Q. Okay.
20	If the IIA assumption is not
21	satisfied, then the Logit model can lead to
22	unrealistic forecasts.
23	Do you agree with that?
24	A. No, I think I think you asked me
25	that earlier, and I think that it depends on

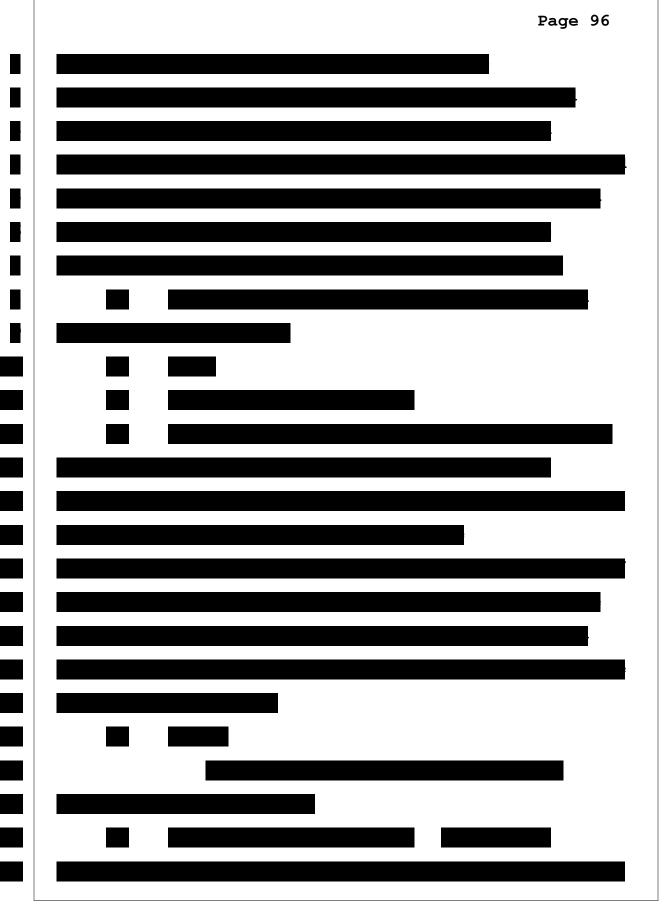
	Page 90
1	the degree to which it's not satisfied, right?
2	In any econometric model, just
3	even ordinary lease squares, we we we
4	make all sorts of demands on the nature of the
5	error terms in the model, just as we do here.
6	And there are there are errors, there are
7	violations and there are other violations.
8	And so I wouldn't I wouldn't condemn it
9	based on on some small violation.
10	I think I think that if the
11	categories were haphazardly assigned or done
12	without any kind of economic logic such that
13	consumers did not perceive, or at least some
14	consumers did not perceive the elements to be
15	substitutes, that that you could get
16	unreliable forecasts.
17	Q. Okay.
18	So if consumers do not believe
19	that the products being studied in the Logit
20	model are substitutes, you can get unreliable
21	forecasts?
22	MS. GIULIANELLI: Objection to the
23	form.
24	THE WITNESS: I think that the
25	better the better requirement, or the more

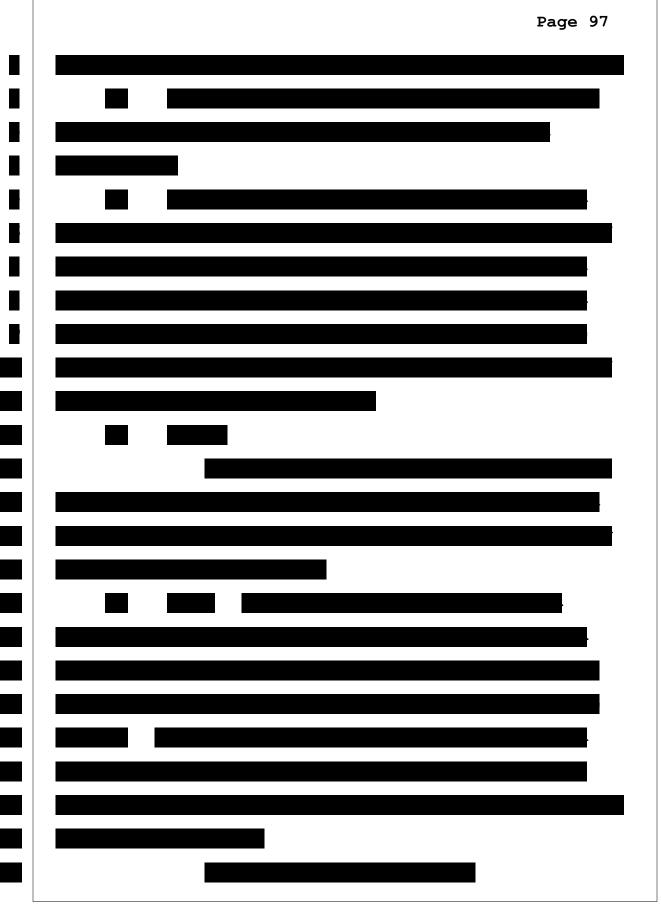
	Page 91
1	formal requirement, is that if if this
2	property of substitution that is at the heart
3	of Logit, which is this proportional
4	substitution, that people tend to go places
5	with higher shares, then you could get a less
6	accurate forecast than than than you
7	would hope.
8	I think that unreliable is is
9	fairly strong language, so I'm reluctant to go
10	that far.
11	MR. RAPHAEL: Okay.
12	BY MR. RAPHAEL:
13	Q. And what is the standard for when IIA
14	has been violated to such a degree that you
15	think that the using the Logit model would
16	lead to forecasts that are inaccurate?
17	A. So here's some things I I would
18	want to look for, is did the categories make
19	economic sense, all right? Is there is
20	there good economic basis to believe that both
21	the developers and the consumers perceived
22	those cat categories to define the contours
23	of competition? And I think we have that
24	here.
25	But the second thing that I'd want

	ATTORNETS ETES ONET
	Page 95
1	trying to predict are, say, the the
2	predicted shares within a category and he
3	thinks that those forecasts could be off,
4	that's not the forecast that I'm making. So
5	it's just the word "forecast" is so general
6	that it's hard for me to to say that it has
7	much relevance here.
8	Q. Do you agree that the Logit model can
9	produce seriously misleading forecasts if IIA
10	fails?
11	A. Seriously misleading forecasts?
12	Q. Um-hmm.
13	A. Well, so here we're trying to predict
14	pass-through rates, and I don't think that our
15	pass-through rate forecast is going to be
16	seriously misleading for some minor infraction
17	of the IIA. And in particular, you know,
18	what's happening is that on a technical
19	matter, we're we're concerned about some
20	unobserved attribute being correlated with the
21	error terms. But if the groupings are done in
22	an intelligent fashion, all these error terms
23	are going to cancel. They're going to wash
24	out.

And so I feel like -- I feel like

25





Page 102
intent that was at the front of my mind was
will the Logit model do a good job or a bad
job at explaining substitution patterns within
a given category, right? And implicit in that
objective is whether the IIA was satisfied.
Q. Did you cite any published economics
article in your reports to establish that it's
appropriate to test the IIA assumption using
the kind of regression that you did?
A. I don't think I've cited articles in
my report that my test was a test of IIA. I
think that I feel confident that IIA was
satisfied by virtue of the fact that Google
selected the categories, the developers
selected in, the model fit well and then
finally, I tested the model under other demand
specifications.
There was quite literally nothing
else that I could do and there was nothing
that your expert did in rebutting it, zero.
Q. Right.
A. Nothing. Dr. Leonard did no test of
the IIA.
Q. Right.
Other than the regression that you

	Page 103
1	did, there was no way for you to test whether
2	the IIA assumption was met; is that right?
3	A. No, that's not right. You're not
4	you're not hearing what I'm saying.
5	I have confidence that the IIA was
6	satisfied because these are economically
7	sensible categories that were designed by
8	Google, that were selected into by the
9	developers. And then when we go to do the
10	actual fit, had the results come back
11	differently, had the coefficients been the
12	wrong sign, had they not been significantly
13	significant, had the R-squareds been low, and
14	then had another demand model done a better
15	job at explaining the variation of the
16	substitution patterns in the data, I would
17	have abandoned Logit.
18	Q. Okay.
19	Other than your regression, was
20	there any test you are aware of that you could
21	have applied to determine whether the IIA
22	assumption was met?
23	A. Yes, and I now feel like I'm
24	repeating myself. There is the
25	Hausman-McFadden test.

Page 104

- Q. But you couldn't apply that here, could you?
 - A. Let me finish. Let me just finish.

Yeah, the Hausman-McFadden test requires you to drop all consumers from the data who selected a particular choice and then re-estimate the model and -- and compare the coefficients, right?

Yes, you cannot do that here because we don't have that kind of granularity in the data.

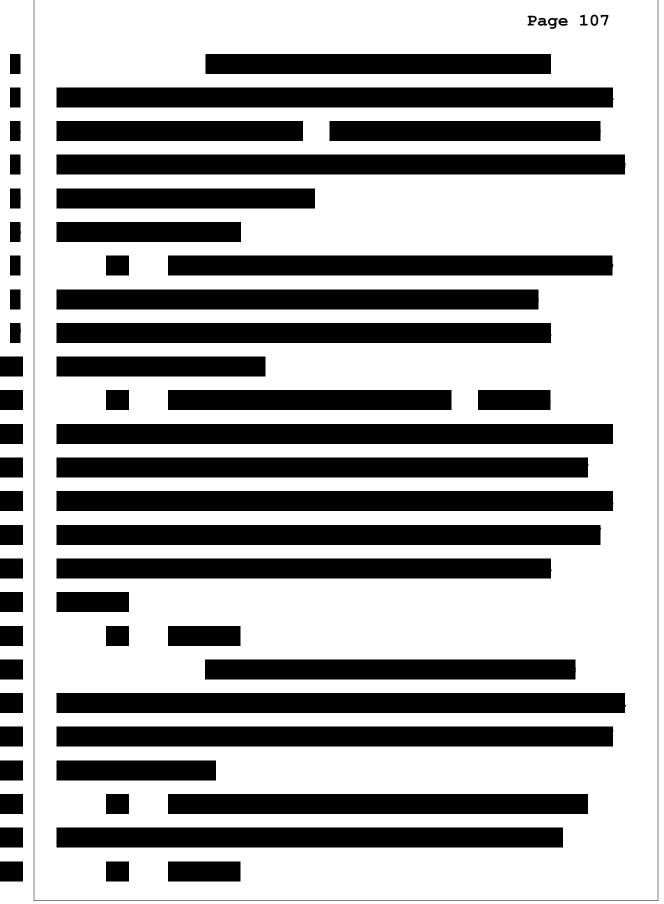
- Q. Are you aware of any source in economics that indicates that it is an appropriate and reliable way to test for the IIA assumption to do the kind of regression that you did here?
- A. I don't think that that's how you'd find it in a textbook. I think that the way that an econometrician would counsel you is you have an assumption about how consumers choose within a category; right? If the model doesn't fit well, then that would tend to indicate that assumption is violated. But it starts with the -- with the goodness of fit of the model itself.

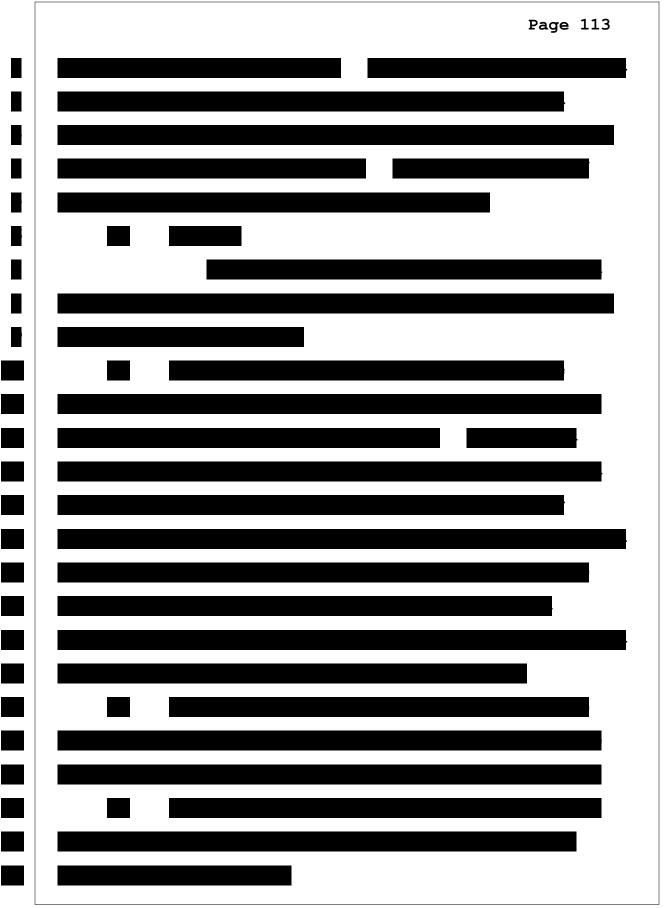
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	Page 105
1	Q. Okay.
2	Are you aware of any source in
3	economics that indicates that it's a reliable
4	way to test for the IIA assumption to do the
5	kind of regression that you did?
6	A. Let me hear it back. I'm sorry.
7	Q. Are you aware of any source in
8	economics that indicates that doing the
9	regression that you did is an appropriate and
10	reliable way to test for whether the IIA
11	assumption is met?
12	A. I don't know if if I can point
13	you, sitting here, to an economic source for
L 4	that proposition, but what what economics
15	counsels is that to determine whether a model
16	is appropriate, you need good economic
17	foundation and you need a goodness of fit in
18	the data.
19	And then finally, what I did is I
2 0	tried alternative specifications. I don't
21	think there's anything else that we can do.
22	Q. Okay.
23	Are you aware of any source in
2 4	economics that goodness of fit is an

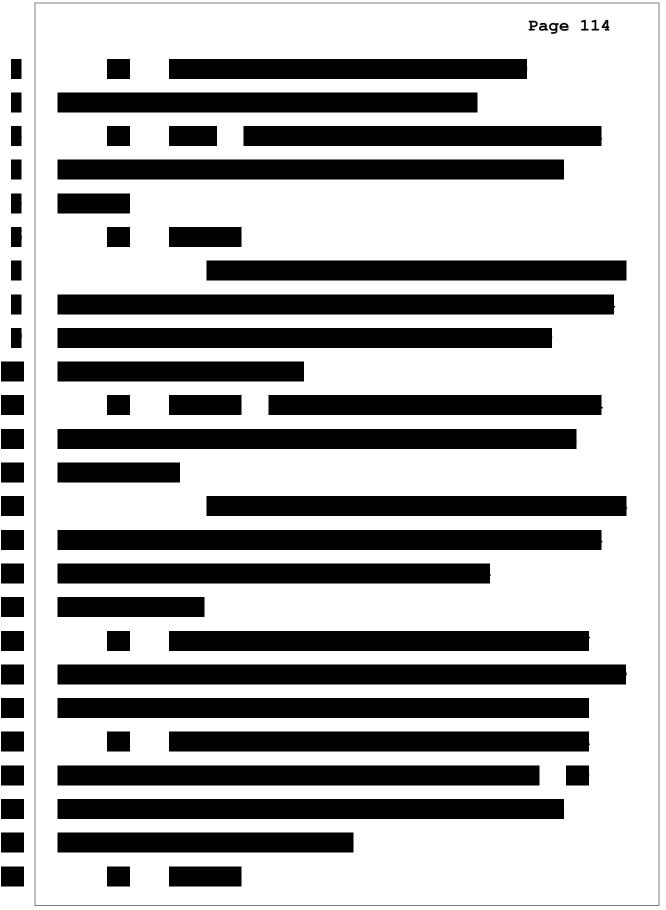
appropriate way to test for the IIA

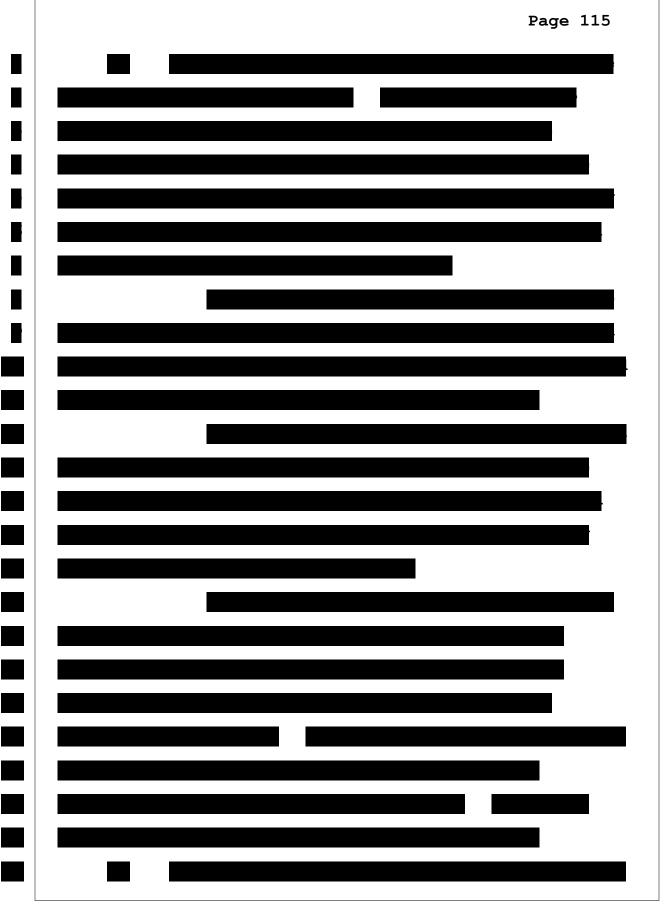
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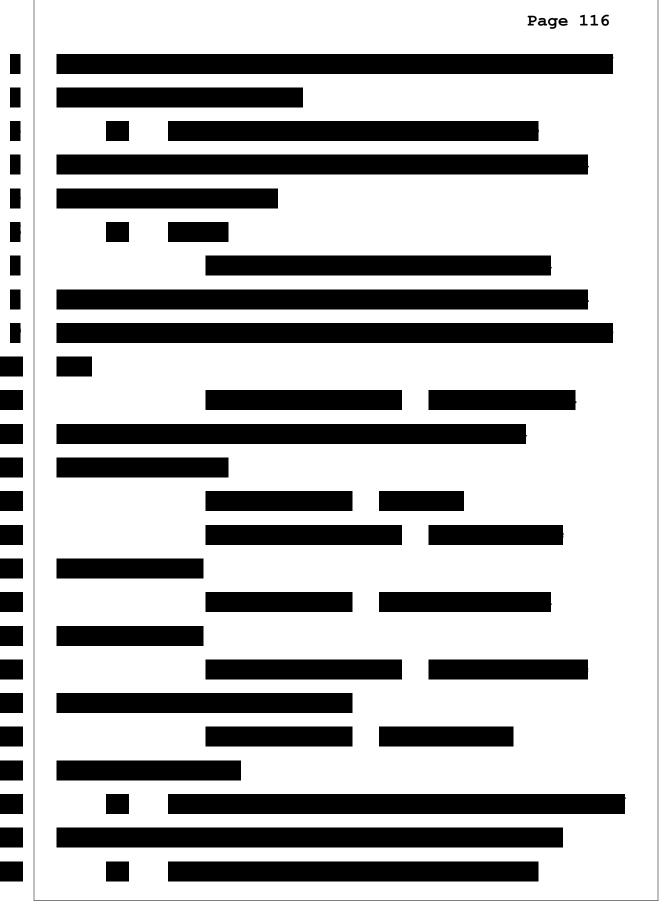
	Page 106
1	assumption?
2	A. No. The way that the economics will
3	tell you is that goodness of fit will tell you
4	if the Logit is a is a is the relevant
5	way to describe preferences in substitution
6	patterns here.
7	Now, IIA is lurking in the
8	background of all of that.
9	Q. Right.
10	But you're not aware of any source
11	in economics that goodness of fit is an
12	appropriate way to test for the IIA assumption
13	directly?
14	MS. GIULIANELLI: Objection to the
15	form.
16	THE WITNESS: I think that if you
17	go into the economic literature and you see
18	the vast application of Logit in antitrust,
19	mergers in particular, I think that for an
20	economist or an agency, or an agency's
21	economist to feel good about using Logit, what
22	they care most about is whether the categories
23	were constructed intelligently and with a good
24	grounding in economics and in in record
25	evidence.

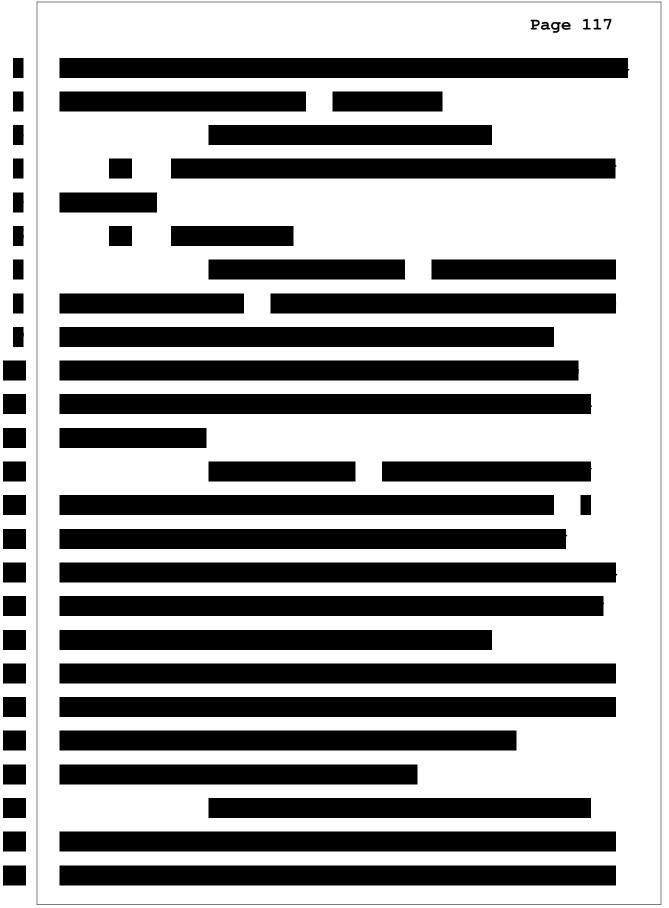


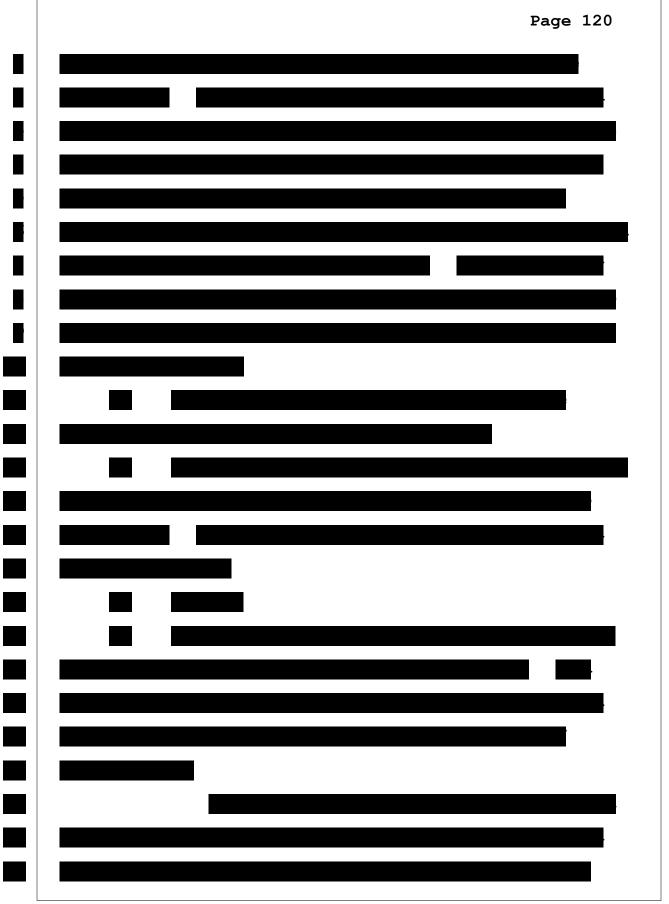


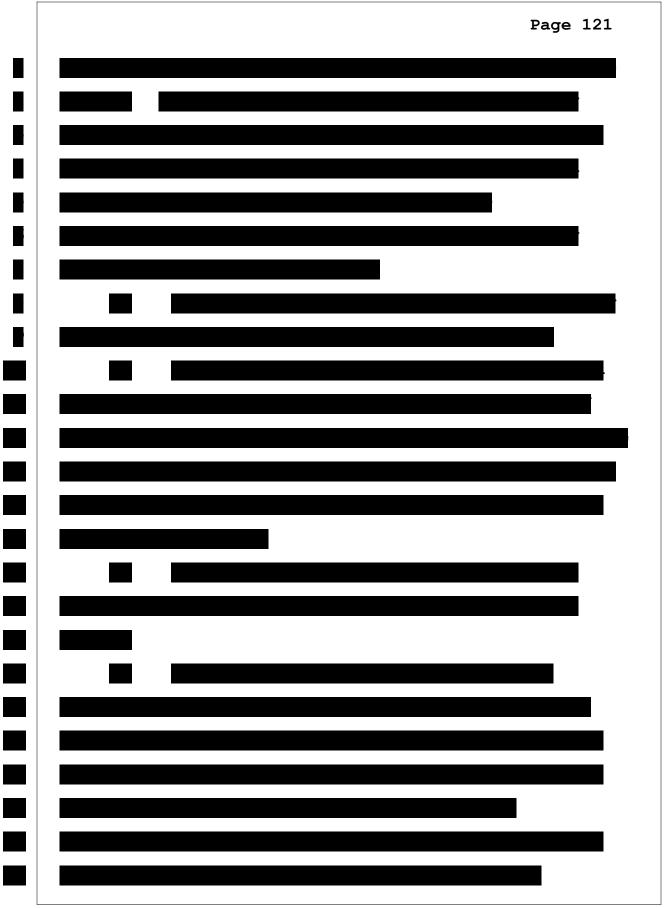






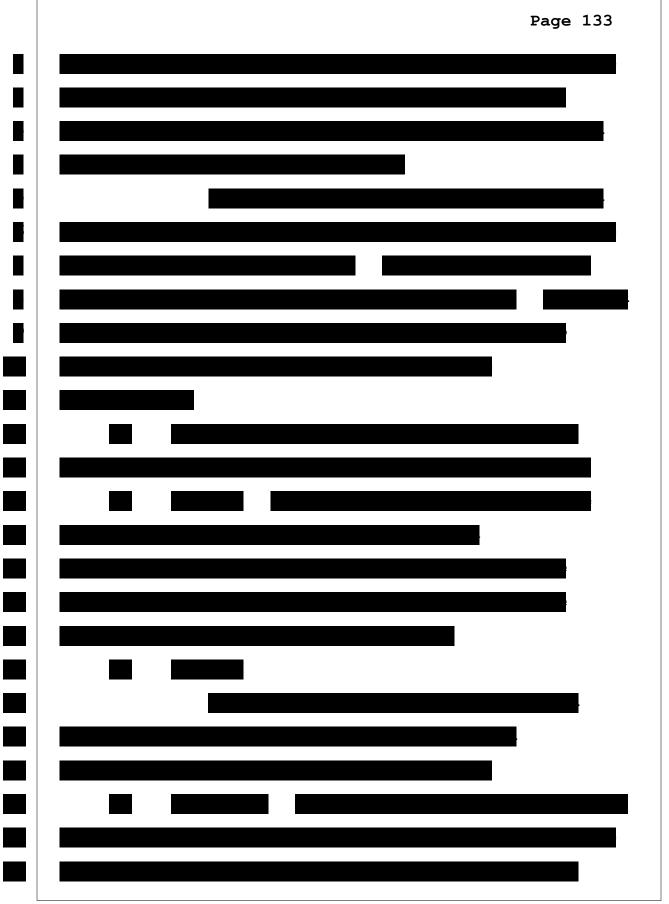


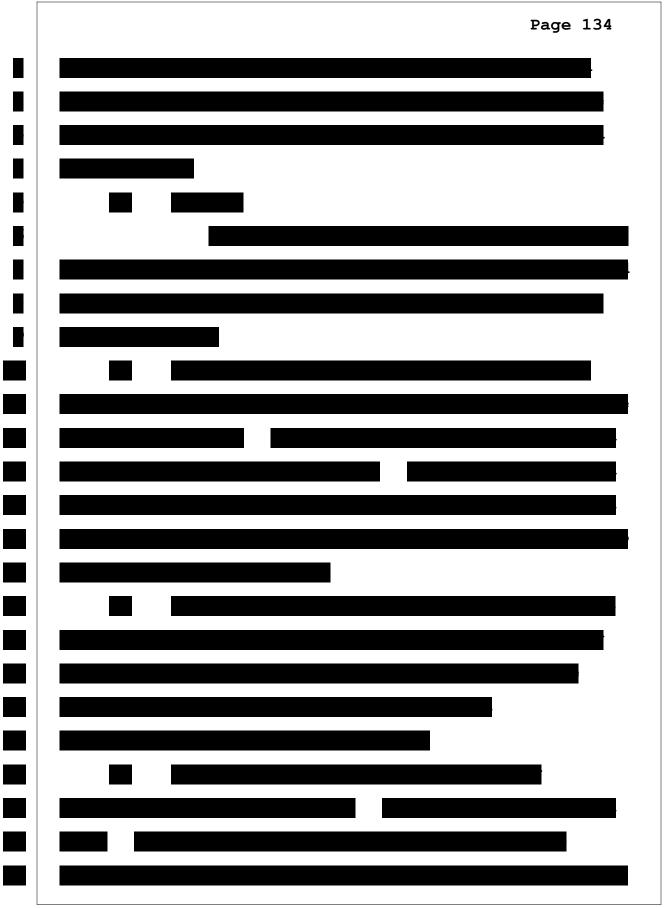


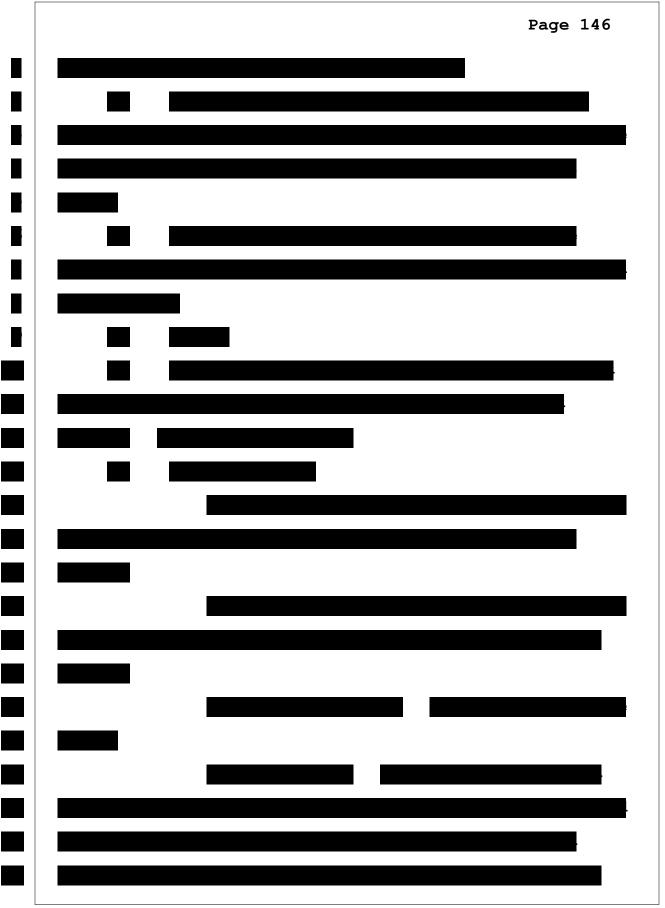


	Page	122

	Page 123
1	would that would somehow not move, and it's
2	something below a half a percent. It's de
3	minimus.
4	Q. Right. So let's let's look at
5	that. That's page 203 of your opening Merits
6	report.
7	A. Okay.
8	Q. And this is Table 17.
9	A. Yes.
10	Q. So you find there that some non-zero
11	amount of developers would not reduce their
12	prices if they were committed to having their
13	prices end in 9; isn't that right?
14	A. Correct.
15	Q. Do you know how many developers
16	that that amounts to?
17	A. Sitting here, I don't, but it's
18	should be easy to figure out the backup.
19	Q. Did you run a version of this table
20	in your reports with the assumption that
21	developers would want to set prices ending in
22	99?
23	A. I did not.
24	Q. Okay.
25	And do you know the percentage of







	Page 147
1	you tried to do the derivative in your head.
2	I think that when you look at the
3	traditional models of pass-through, which,
4	remember, are a derivative of the if you
5	think of it as a derivative of the Lerner
6	index, it's it's looking at how the profit
7	maximizing price changes in response to a
8	change in cost.
9	And then you look at the most
10	common functional forms. You'll often see
11	that marginal cost drops out of the
12	pass-through equation.
13	BY MR. RAPHAEL:
14	Q. Well, does it drop out when you're
15	looking at an ad valorem cost?
16	A. In this case, it drops out of the
17	pass-through equation, yes.
18	Q. Okay.
19	And can the amount of a
20	developer's marginal cost, other than the
21	service fee, affect the amount of
22	pass-through?
23	A. Not under the Logit model that I'm
24	using. It's conceivable it could in others,
25	but in my Logit model not in the Logit

	Page 150
1	The most I mean, the most
2	obvious one would be processing fees. But
3	there are other marginal costs, royalty fees
4	that they pay, but but I haven't estimated
5	those at the developer level.
6	Q. One of the inputs into your
7	pass-through model is Google's market share in
8	a world without the challenged conduct.
9	A. Not in the pass-through model. Did
10	you mean to say it certainly Google's
11	market share is in Rochet-Triole and it's in
12	Landes-Posner.
13	Q. Yes. One of your inputs into
14	calculating what Google's but-for service fee
15	would be is Google's market share in the
16	but-for world.
17	A. Correct.
18	Q. And you estimated that share to be 60
19	percent; right?
20	A. I I used as an input the
21	60 percent because that's the best that the
22	economic literature in busting up monopolies
23	can can give to us.
24	I also, you know, would note
25	yes, that is that is the best estimate that

	Page 151
1	I could find in the literature.
2	Q. Okay.
3	And that market share estimate is
4	based on an article that attempted to estimate
5	AT&T's market share in the longest in its
6	telephone market in the 1980s?
7	A. Yes, with one important caveat that
8	you left out, which was after AT&T's
9	anti-competitive tie was unwound, right?
10	What I what I was looking for
11	was the closest analogue in antitrust history
12	in which a dominant firm that had extended its
13	leverage from one market into another was
14	forced to unbundle or break apart the tie.
15	There aren't a lot of such episodes, right, in
16	the history of antitrust for reasons that we
17	could describe discuss over coffee, but we,
18	in any event, it's a network industry; it's
19	the monopoly, where the tie gets removed.
20	It's been studied ad nauseam by economists
21	for for the price effects that can be
22	attributable. And so I thought that
23	60 percent was the best estimate.
24	And in any event, it turns out
25	my my in-app model for damages is not that

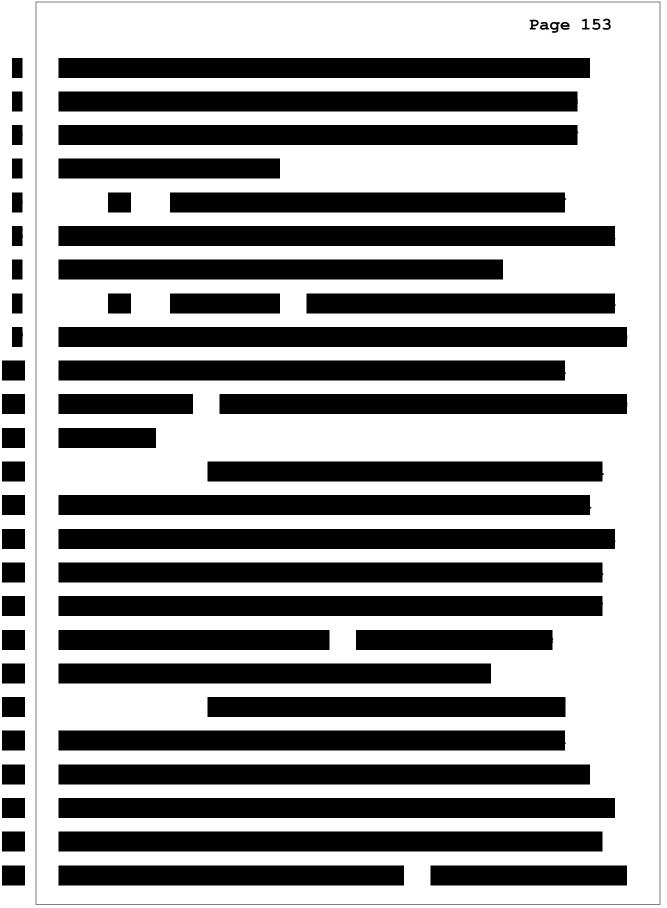
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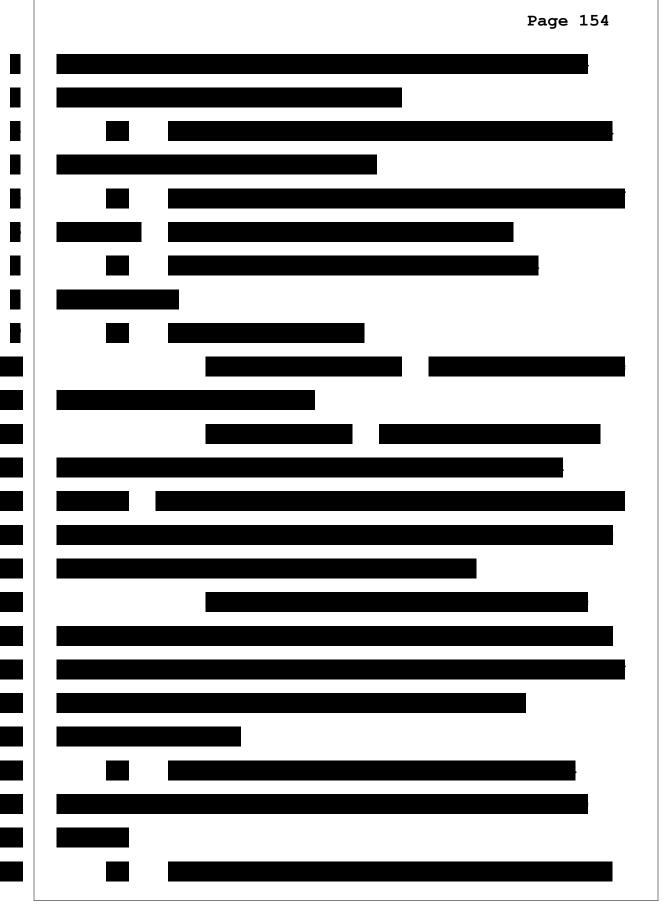
sensitive to the 60; that is, as you put in different inputs for 60, you go to 70 or if you think that Google share would have fallen to 50, it just turns out that the model is not that sensitive to that input.

- Q. Well, do you disagree that if Google's but-for market share is 75 percent, that your damages figure falls by over 40 percent?
 - A. No, it wouldn't. It would not.

So you're saying if all you did -see, what -- what Dr. Leonard, respectfully,
did was that he kept changing two parameters
at a time. He kept changing the but-for share
and the actual share. If he held everything
constant for Landes-Posner, if you change just
the but-for share, say, by 10 percentage
points, you get, depending on which direction
you go, you get something on the order of a 5
percentage point swing in damages.

And so what -- what that's telling you is that the input is important, but the results don't vary significantly, or let's just say the results aren't amplified based on the change in this input; that they're, in





	Page 163
1	opting in and participating in a loyalty
2	program, and if the benefits for doing so are
3	paltry, that could affect how many people take
4	advantage of the program.
5	Q. Right.
6	There are costs to opting into a
7	rewards program; right?
8	A. Yes.
9	Q. Okay.
10	And in the in your Play Points
11	damages model, you assume that all Play Store
12	users would have signed up for the Play Points
13	program?
14	A. No.
15	Q. You don't?
16	A. No, not necessarily. What I'm trying
17	to solve for is the extent of a subsidy that
18	Google would have offered across in the
19	aggregate across all users, but I don't think
20	that I'm necessarily assuming that each user
21	avails itself. It's possible that it would,
22	but my my damages model for aggregate
23	damages is looking at the savings to the class
24	if Google were to be more generous in its
25	subsidy program.

Page 164

- Q. Your Play Points model measures the damages that consumers would have incurred in the aggregate?
- MS. GIULIANELLI: Objection to the form.

THE WITNESS: I think that my model is being offered for an estimate of aggregate damages, among other things; I think it also speaks to injury and impact. But I -- I believe that that -- that -- that parameter that comes out that we're interested in, which is the price on the consumer side of the market, is telling you across all consumers, this is -- this is what -- what -- what Google will pay.

BY MR. RAPHAEL:

- Q. Does your Play Points model tell the jury how much a user who did not sign up for Play Points in the actual world was damaged?
- A. You could estimate, for a given member of the class, you could estimate what the reduction in -- in his or her net payments would be relative to what they spent in the actual world. And you wouldn't abandon that exercise simply because they didn't use Play

Page 165

Points in the real world. In the real world, the reason why most people or many people didn't use it is because Google was so skimpy with the offering.

In a but-for world in which Google is forced through competition to employ a more generous points model, including making the enrollment easier, they'd -- they'd be forced to. Under -- in a competitive market, it would be reasonable to assume that -- that most, if not all, consumers in the class would -- would partake and -- and take advantage of that -- of that program.

- Q. Are you offering the opinion that all users in the but-for world would have signed up for the Google Play Points program?
- A. Economists tend to be reluctant to say all, like do I know with certainty or to a reasonable certainty that every single class member signs up? I don't know if the model can tell us that.

What the model is telling us is what's the -- what is the aggregate or average subsidy that Google offers. And I think that it is reasonable to infer that if the subsidy

ATTORNETS ETES UNLT
Page 166
gets sufficiently large such that it is a
meaningful reward, that most, if not all,
consumers will take advantage of it in the
but-for world.
Q. Have you estimated what portion of
users would have signed up for the Play Points
program in the but-for world?
A. I feel like that question is no
different from the from the last.
I have not given an empirical
estimate of the proportion. I think it's very
high, it could be close to 100 percent, but
there's no requirement that it's a hundred
percent for the model to to hold.
Q. If I were to come to you with a user
chosen at random from the data that you've
looked at of people that used the Google Play
Store, could your model tell me whether that
user would have signed up for the Google Play
Points program in the but-for world?
A. I don't think the model tells you
whether a user will sign, but what the model
can tell you is what the subsidy, what the

predicted subsidy would be for that user. And

if the subsidy is as large as these models are

Page 167 1 implying, whether it's the Rochet-Triole model 2 or the Amazon model, these are big numbers; 3 we're talking about percent savings. It seems like a safe inference is 4 5 that if a -- if Google wants to credit you 6 between and percent, I'm going by 7 memory, of the -- of the price of partaking in 8 all the fun of its Play Store, that most, if 9 not all, consumers will avail themselves of 10 that option. 11 Have you calculated the minimum value 12 of the Play Points subsidy that would be 13 necessary to get any consumer to sign up for 14 Play Points? 15 I haven't calculated it down to the 16 decimal, but my opinion is this; that in the 17 actual world, with a -- with a paltry subsidy 18 , you see many people not οf 19 availing themselves of the option. 20 In a but-for world where the 21 percent, subsidy is in the order of 22 if we -- if Google matches Amazon, I think a 23 safe inference is that all or almost all 24 consumers will avail themselves of that 25 option.

Page	1	68

- Q. Well, your Play Points model, though, is about the percentage of the price that would be credited back to consumers, not the percentage of Google's revenue; right?
- A. Oh, no, no, no. Hold on. We're on the same page, I think. It's the percentage of the price from the consumer's perspective; right?
 - Q. Right.

- A. And so if -- if in a but-for world,

 Google takes its subsidy from, say,

 to ______, right, that is a

 material change in the terms of the program,

 at which point you're looking at all your

 friends who are getting ______ off and you

 say hey, sign me up, I'll take some of that,

 too.
 - Q. Right.

Have you calculated the percentage credit on the price that would be necessary for any consumer to find it worth it to overcome the cost of signing up and sign up for the Play Points program?

A. I haven't calculated the percentage, but I will say that in a but-for world where

Pag	-	1	69
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Google is going head-to-head with a -- with a competitor who is competing on this dimension, whether it's Amazon or Facebook or Samsung, that Google would make sure that whatever enrollment costs there were, they would not be so prohibitive as to allow that rival to eat their lunch.

- Q. Have you done any analysis of the elasticity of demand for the Play Points program?
- A. I have done elasticity of demand of consumers with respect to pricing in the App Store. So to the extent that Play Points or any subsidy changes pricing, you could figure out what the sensitivity would be.
- Q. But you haven't tested whether what happens when Google changes its Play Points subsidy and how that affects whether people sign up for the Play Store -- for the Play Points program; you haven't done that?
- A. Well, it's a bit of a trick question here, because Google has been at -- at this paltry _____, you know, since the advent at least in the U.S.

Now, there are some experiments

	Page 170
1	that you might be able to look at. In Korea
2	and Japan, I think that Google tried to meet
3	the limited competition that that occurred
4	there with an increase in the subsidy. But I
5	haven't studied I haven't studied what the
6	reaction would be.
7	I think it's safe to infer that
8	Google felt, and this is just kind of basic
9	economics, that Google felt compelled to meet
10	the competition because they feared that if
11	they didn't if they weren't competitive on
12	that dimension, they would lose customers.
13	Q. Your Play Points model also uses the
14	elasticity of demand from an article about
15	AT&T long distance in the 1980s?
16	A. That's of the rival elasticity,
17	that's right.
18	Q. Right.
19	And that's drawn from the same
20	article as the article where you got the
21	but-for share for Google; right?
22	A. Correct.
23	Q. And you didn't calculate the
24	elasticity of demand in the but-for world
25	yourself?

Page 171
A. Well, this is remember what we're
talking about is the rival supply elasticity.
So Google by the tie doesn't allow any rival
to enter and expand, and now you're asking me
where's your where's your model, Singer,
for how PayPal or Stripe, you know, would have
responded to an increase in Google's price.
They couldn't come in by virtue of the tie.
So I don't think that that
life, by virtue of Google's restrictions and
the challenged conduct here, is going to allow
us to test for rival supply elasticity
particularly in the but-for world.
Q. You didn't present your Amazon Coin
damages model at the class certification
stage?
A. That's correct.
Q. Why not?
A. I don't think that I had data at
that at that time to estimate Amazon's
subsidy.
Q. And your Amazon Coins damages model

MS. GIULIANELLI: Objection to the

is used for calculating aggregate damages?

form.

Page 172
THE WITNESS: Correct. That
that's fair, among other things. But I think
that the primary purpose here, now that we're
at the merits, is what the what aggregate
damages are.
BY MR. RAPHAEL:
Q. And if I again, if I took a user
at random from the from the data on the
users of the Google Play Store, could your
Amazon Coins model tell me whether how much
in subsidy that consumer would have received?
A. Yes.
Q. And could it tell and and is
your idea that the subsidies in your Amazon
Coins model would have been part of a program
that all users would have signed up for?
A. I think that once you get into the
range, I think that it would be
irrational and illogical for a consumer to
pass up that savings. They would figure out a
way to get enrolled.
Q. Okay.
But you again, you haven't
studied, with respect to your Amazon Coins

model, the percentage of savings that would be

Page 180

models and I think they're both reasonable.

- Q. So you can't say whether it's more reliable for the -- to estimate damages at the that you have for the Amazon Coins model or the that you have for the Play Points model?
- A. No. And you keep -- you keep going back to the difference in the magnitude.

 That's just because we have such a large base of spending.

what we're really trying to figure out is as we toggle between the of the Play Points and , which is about , should we -- should we credit Google with an incumbency advantage or should we not.

I think there are legitimate arguments that would suggest that if entry by a rival were to occur early enough in the place for experience, then it would be -- it would be too charitable to Google to credit it with an incumbency advantage, right? If Google were facing a rival right out of the gate, right, what's the source of its -- of its incumbency advantage?

Page 181

- Q. Have you formed an opinion as to which of the numerous different damages models that you have is the most reliable one for the jury in this case?
- A. I think it's -- it's hard to compare models that are meant to do different things, right? We've got some models that are meant to -- to come up with but-for take rates and pass-through in the -- in the primary market. We've got a different model that's meant to predict the but-for take rate in the aftermarket.

I don't know how one would say that one is better than the other. I feel like these are the best that economics has to offer for each of the -- each of the problems that I've been given.

- Q. Did you consider using any other App Store as a benchmark for your subsidy model rather than the Amazon App Store?
- A. It's -- it's certainly possible I considered. One -- one problem that I had, for example, with the ONE Store is that the ONE Store is competing along both dimensions. I think they took their take rate down and

	Page 182
1	they did a more generous subsidy program. And
2	remember, in this when we go down this
3	branch of the tree, we're thinking about
4	competition that only occurs on one dimension;
5	namely, take rate.
6	And the second thing that that
7	worried me about ONE Store is that it's
8	it's specific to Korea and Amazon was was
9	global. And so I felt that that we just
10	didn't have as good of a benchmark as Amazon
11	for for that parameter.
12	Q. Okay.
13	A. Oh, there's one more reason, too, is
14	that I don't think we have the magnitude of
15	ONE Store's subsidy. We have the dollar
16	amount, I found press articles that said it's
17	X hundreds of millions of dollars, but I
18	I I wasn't able to to generate a a
19	subsidy in terms of percent of spend for ONE
20	Store.
21	Q. Okay.
22	MS. GIULIANELLI: Pretty soon we
23	can take a break for lunch.
24	MR. RAPHAEL: Sure.
25	BY MR. RAPHAEL:

	Page 183
1	Q. Did you did you analyze whether
2	any of the benchmark App Stores in Table 7
3	offer subsidies and whether you could use
4	those as benchmarks?
5	A. I did not.
6	Q. Okay.
7	Just a couple more questions and
8	we can take a break for lunch.
9	A. Okay.
10	Q. Now, users sign up for Play Points
11	and then they earn points when they make
12	purchases; right?
13	A. Correct.
14	Q. And Amazon Coins have to be purchased
15	separately?
16	A. Correct.
17	Q. Did you consider whether that
18	difference could affect whether the Amazon
19	Coins program is a proper benchmark?
20	A. I certainly considered it, and I just
21	want to make clear that in my in my but-for
22	world under this model, I am not positing that
23	Google mimics Amazon's program verbatim,
24	right. I recognize there are differences in
25	the program.

Page 187
A. Close. It's just yeah, the share
of that developer within its category, that's
right, its market share.
Q. Right.
And so what the regression is
looking at is if the developer changes its
price, does that reduce its share of the app
category; right?
A. Right. Implying that that there
would be substitution away from that app
towards what consumers perceive to be
substitutes.
Q. Right.
And does the regression that you
ran that looks at the change in price and its
effect on the developer's share of its
category tell you anything about where the
substitution, as you put it, comes from?
A. Where it comes from is, of course,
the app who is raising the price. Did you
mean to say where it's going? I don't
where it's coming from
Q. Ah, thank you for that.
A. Okay.

I'll ask a better question.

Q.

	Page 188
1	A. Okay.
2	Q. So your regression that you ran in
3	connection with your Logit model, does it tell
4	you where, when a developer raises its price,
5	where consumers will substitute to within the
6	category?
7	A. This this particular model, or at
8	least for this purpose of a model, or this
9	stage of the model, it is simply telling you
10	that the developer loses share. But once you
11	know that the model fits and is the best
12	demand system for the data, you can infer that
13	users are moving around the category in
14	proportion to the market share of the of
15	the other goods.
16	Q. Okay.
17	But the regression is one of the
18	things you used to determine the fit of the
19	model; right?
20	A. Correct.
21	Q. Okay.
22	And the regression, itself, does
23	not tell you when a developer raises its price
24	or lowers its price, I guess, to which apps do
25	the other do the consumers substitute;

	Page 189
1	right? It doesn't tell you that?
2	A. Correct.
3	Q. Do you agree that the relevant
4	product market should include all competitive
5	constraints?
6	A. No.
7	Q. Is product quality
8	A. Can I also, can I just say why? I
9	mean I
10	Q. Sure.
11	A. Just to be clear, you don't need to
12	include all competitive constraints because
13	there could be some very weak constraints that
14	don't prevent the exercise of market power.
15	So if the guidelines are telling
16	you to include only those that are necessary
17	in order to effectuate a price increase over
18	competitive levels, so that was the only part
19	I was pushing back on.
20	It's not all competitive
21	constraints, right? It's not every one under
22	the sun. And maybe we could define what you
23	mean by competitive. But but I took it to
24	mean literally any competitive including weak,
25	right? We don't need weak constraints to be

